STATE OF WASHINGTON

DEPARTMENT OF AGRICULTURE

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June 15, 2017

Tawanda Maignan – Team Leader
Risk Integration, Minor Use, and Emergency Response Branch
U.S. EPA Office of Pesticide Programs (7505 P)
Room S4900, One Potomac Yard
2777 Crystal Drive
Arlington, VA 22202

RE: Emergency exemption for the use of Sulfoxaflor (Transform WG) on alfalfa grown for seed to control Lygus bugs in Washington.

Dear Ms. Maignan,

Section 18 of the amended FIFRA provides the Administrator may exempt a state or federal agency from provisions of FIFRA if a determination is made that emergency conditions exist which require such exemption. The Washington State Department of Agriculture (WSDA) is applying for a specific exemption for the use of Sulfoxaflor (Transform WG) on alfalfa grown for seed to control Lygus bugs in Washington, based on the following:

1. **All of the available registered alternatives (except for flonicamid) are highly toxic to alfalfa leafcutting bees and alkali bees, which as essential for pollination of alfalfa grown for seed.**
2. **In 2015, WSDA approved a Section 24c SLN registration for Transform WG on alfalfa grown for seed to control Lygus bugs, but the SLN registration was cancelled in the fall of 2015 due to a lawsuit unrelated to this use.**
3. **Research by WSU has demonstrated that sulfoxaflor is relatively safe to alfalfa leafcutting bees and alkali bees, when used according to the proposed Section 18 use directions.**
4. **The acreage of alfalfa hay in the affected area has increased more than 10% in the last 5 years, which drastically increases the number of Lygus bugs that are infesting alfalfa seed fields.**
5. **A Tier 3 analysis of significant economic loss (SEL) by WSU indicates that net revenue for alfalfa seed growers could decrease by 70.6% if they are unable to**

control Lygus bugs using the best available alternatives (flonicamid and naled).

This is the second year that the WSDA has submitted an application for this use. In 2016 the application was withdrawn by WSDA, since EPA stated that the criteria required for an "urgent and non-routine situation" had not been met. WSDA incorporates by reference all information in the previous application that was submitted on April 27, 2016.

A. **General Information**

1. TYPE OF EXEMPTION:

Specific

2. CONTACT PERSONS:

Dr. Douglas Walsh, Professor and Extension Specialist
Coordinator, Integrated Pest Management
Department of Entomology
Washington State University
24106 N. Bunn Rd.
Prosser, WA 99350
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3. DESCRIPTION OF PESTICIDE:

Brand Name:	Transform WG
EPA Reg. No.:	62719-625
Active Ingredient:	Sulfoxaflor
Registrant:	Dow AgroSciences

4. DESCRIPTION OF PROPOSED USE:

a. Crop to be treated and location:

Fields of alfalfa grown for seed located in the following counties: Franklin, Grant, Walla Walla, and Yakima.

b. Method of application:

Ground.

c. Rate of application:

Apply 1.5 to 2.75 oz formulated product (0.047 to 0.086 lb. a.i.) per acre per application. Ground application must be made in a minimum of 15 gallons of water per acre.

d. Maximum Number of applications:

Two applications.

e. Total acreage to be treated:

15,000 acres.

f. Total amount of pesticide to be used (formulated product and active ingredient):

5,156.25 lb. of Transform WG (2,580 lb. a.i. of sulfoxaflor).

g. All applicable restrictions and requirements concerning the proposed use (Attachments 1 and 2 are the federal label for Transform WG and the proposed Section 18 use directions.):

- Follow all applicable restrictions, directions, Worker Protection Standard requirements, and precautions on the federal label for Transform WG (EPA Reg. No. 62719-625).
- The emergency exemption use directions must be in the possession of the user at the time of application.
- It is a violation of federal law to use this product in a manner inconsistent with the emergency exemption.
- Any adverse effects resulting from the use of Transform WG (Sulfoxaflor) under this emergency exemption must be immediately reported to the Washington State Department of Agriculture (1-877-301-4555).
- Do not enter or allow worker entry during the restricted entry interval (REI) of 24 hours.
- Do not make applications less than 7 days apart.
- Do not make more than 2 applications per crop.
- Do not apply more than a total of 5.5 oz of Transform WG (0.172 lb ai of sulfoxaflor) per acre per year.
- Do not apply this product by aerial application or through any type of irrigation system.
- This product is highly toxic to bees exposed through contact during spraying and while spray droplets are still wet. This product may be toxic to bees exposed to treated foliage for up to 3 hours following application. Toxicity is reduced when spray droplets are dry.
- If 5 or more blossoms per square yard are present on average in the field to be treated, do not apply between four hours prior to sunrise and 30 minutes prior to sunset.
- All alfalfa seed screenings shall be disposed of in such a way that they cannot be distributed or used for human food or animal feed. The seed conditioner shall keep records of screening disposal for three years from the date of disposal and shall furnish the records to the director of the WSDA immediately upon request. Conditioner disposal records shall consist of documentation of on-farm disposal, disposal at a controlled dump site, incinerator, composter, or other equivalent disposal site and shall include the lot numbers, amount of material disposed of, the grower(s), and the date of disposal.
- No portion of the alfalfa seed plant, including but not limited to green chop, hay, pellets, meal, whole seed, cracked seed, roots, bulbs, leaves and seed screenings may be used or distributed for food or feed purposes.
- All alfalfa seed grown or conditioned in Washington shall bear a tag or container label which forbids use of the seed for human consumption or animal feed.

- No alfalfa seed grown or conditioned in Washington may be distributed for human consumption or animal feed.

h. Use period:

June 15, 2017 through August 31, 2017 (during bloom).

5. ALTERNATE METHODS OF CONTROL:

Chemical:

Flonicamid (Beleaf 50 SG Insecticide) and naled (Dibrom 8 Emulsive) are registered for use on alfalfa grown for seed as Section 24c Special Local Need (SLN) registrations and have provided effective control of Lygus bugs in a blended tank mix during bloom, with a residual of approximately 7 days. Naled (organophosphate insecticide, IRAC Chemical Sub-group 1B) is highly toxic to foraging bees if residues have not completely dried on the alfalfa foliage (at least 12 hours is recommended). In Walla Walla County, alfalfa seed growers are restricted to applying naled during late evening when bees are not actively foraging and residues can dry overnight (WAC 16-230-030).

In addition, flonicamid (IRAC Chemical Group 29) is locally systemic (translaminar) in succulent foliage, but does not move well, and is thus less effective during the late bloom period as foliage begins senescing in mid to late June. Flonicamid is useful for early season control of Lygus, but it is limited to two applications per crop.

Naled has been applied by alfalfa seed growers since the late 1970s. Dr. Walsh has observed that naled has poor efficacy for controlling Lygus, but resistance to naled has not been documented (Walsh, personal communication). Flonicamid has been registered for over 8 years and alfalfa seed growers are apprehensive regarding their exclusive reliance on this single chemistry during bloom on alfalfa produced for seed.

Flupyradifurone is a recent Section 3 registration under the trade name Sivanto. Flupyradifurone (IRAC Chemical Sub-group 4D) is a pollinator safe alternative insecticide that can control Lygus bugs in pre and early bloom applications. Sivanto is registered for use on alfalfa forage. However, the registrant (Bayer CropScience) has specifically stated that use of Sivanto on alfalfa grown for seed is not labeled or supported (refer to previous application).

Novaluron (Rimon) was registered for use on alfalfa grown for seed as a Section 24c SLN registration from 2004 through 2014. The SLN registration expired in 2014, and novaluron (IRAC Chemical Group 15) cannot be used on alfalfa grown for seed. Novaluron can provide good control of Lygus nymphs (especially the early instars), but can cause significant larval mortality to alfalfa leafcutting bees. Accordingly, WSU and the alfalfa seed industry decided not to support the renewal of this SLN registration, and the SLN registration has been cancelled.

Pyrethroid insecticides including alpha-cypermethrin, beta-cyfluthrin, bifenthrin, cyfluthrin, gamma-cyhalothrin, lambda-cyhalothrin, permethrin, and zeta-cypermethrin have either a Section 3 registration on alfalfa or are registered for use on alfalfa grown for seed as a Section 24c SLN registration. All of these pyrethroid insecticides (IRAC Chemical Sub-group 3A) can effectively control Lygus bugs but these pyrethroids are extremely toxic to foraging bees. These pyrethroids cannot be used for Lygus bug control during bloom without causing substantial harm to foraging pollinators.

In years when Lygus bug populations are uncontrollable, pyrethroid insecticides can be applied very late in bloom (typically late July). The economic benefit of controlling Lygus outweighs the injury to pollinating alfalfa leafcutting or alkali bees. Behaviorally alkali and alfalfa leafcutting bee females produce mainly male progeny at the end of their lifecycles through a process known as arrhenotokous parthenogenesis. Arrhentoky is a form of parthenogenesis in which unfertilized eggs develop into males. This is a common trend among solitary bees. Male progeny contribute minimally to the following years "bee return" and the pollination services these "returning" bees provide.

Organophosphate insecticides including chlorpyrifos, dimethoate, malathion, and oxydemeton methyl have either a Section 3 registration on alfalfa or are registered for use on alfalfa grown for seed as a Section 24c SLN registration. All of these organophosphate insecticides (IRAC Chemical Sub-group 1B) can effectively control Lygus bugs but these organophosphates are extremely toxic to foraging bees. These organophosphates cannot be used for Lygus bug control during bloom.

N-Methyl Carbamate insecticides including carbaryl, formetanate hydrochloride, and methomyl are registered on forage alfalfa under Section 3 with labeling that restricts their use during bloom. All of these n-methyl carbamate insecticides (IRAC Chemical Sub-group 1A) can effectively control Lygus bugs, but these n-methyl carbamates are extremely toxic to foraging bees. These n-methyl carbamates cannot be used for Lygus bug control during bloom.

Non-chemical:

Peristenus spp. A collective of 5 closely related parasitic wasp species that are dominated by the species *Peristenus howardi* has been documented in several locations (most notably Parma, ID) as being capable of biologically regulating Lygus bug populations. Unfortunately we have never observed levels of parasitism to exceed 15% in Walla Walla or Yakima Counties. In multiple years of monitoring in the early 2000s, WSU researchers have never captured a Lygus bug nymph that was parasitized by *Peristenus* spp. in Grant or Franklin Counties.

6. EFFICACY DATA:

WSU research has demonstrated that sulfoxaflor provides effective control of Lygus bugs (attachments 3 and 4).

7. RESIDUE DATA:

Not applicable for this use. For the purposes of pesticide registration, alfalfa grown for seed is considered a non-food and non-feed site of pesticide use in Washington (WAC 16-228-1270). Appropriate use restrictions were included in the proposed Section 18 use directions.

8. RISK INFORMATION:

a. Human Health:

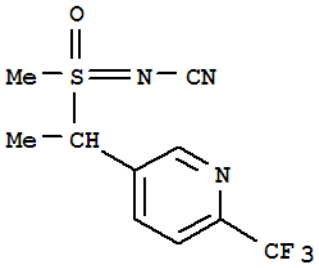
The sulfoxaflor human health risk assessment has a good overview of the studies that were reviewed by EPA (refer to previous application). No adverse impacts on human health are expected from this use.

Residential Use:

This emergency exemption is for agricultural use only, not residential use.

Mode of Action:

Sulfoxaflor is a sulfoximine insecticide that is currently registered (EPA Registration No. 62719-625) under the trade name Transform® by Dow AgroSciences. The sulfoximine class of insecticides is characterized by sulfoxaflor ([N-[methyloxido[1-[6-(trifluoromethyl)-3-pyridinyl]ethyl]-λ4-sulfanylidene] cyanamide]. Sulfoxaflor represents a new class of insecticides that exhibits a high degree of selective efficacy against a wide range of sap-feeding insects including plant bugs and aphids. Sulfoxaflor is classified by the Insecticide Resistance Action Committee (IRAC) as a nicotinic acetylcholine receptor (nAChR) competitive modulator (IRAC Chemical Sub-group 4C), and functions in a manner distinct from other insecticides that act as nAChR competitive modulators. Sulfoxaflor also exhibits structure activity relationships that are different from other nAChR competitive modulators such as the neonicotinoids (IRAC Chemical Sub-group 4A). Lygus bugs exposed to lethal doses of sulfoxaflor exhibit initial symptoms including tremors, antennal waving, and leg extension and curling. Paralysis ensues and the Lygus bugs succumb to death.



Timing of Crop Harvest:

August 15, 2017 through October 1, 2017.

Worker Protection Standard (WPS):

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear

b. Environmental Issues:

The sulfoxaflor ecological risk assessment has a good overview of the studies that were reviewed by EPA (refer to previous application). No adverse impacts on the environment are expected from this use.

WSU research has demonstrated that sulfoxaflor is not harmful to the alfalfa leafcutting bee, *Megachile rotundata* (Fabricius) (Hymenoptera: Megachilidae) and the alkali bee, *Nomia melanderi* Cockerell (Hymenoptera: Halictidae) when sprayed residues are dry (attachments 3 and 4). Both species of bees are used to pollinate alfalfa grown for seed in Walla Walla County. Producers of alfalfa grown for seed in Franklin, Grant and Yakima Counties rely almost exclusively on alfalfa leafcutting bees. Honey bees are not used to pollinate alfalfa grown for seed in Washington State.

9. NOTIFICATION OF REGISTRANT:

Dow AgroSciences has been notified of this application and has provided a letter of support (attachment 5).

10. NOTIFICATION OF OTHER AGENCIES:

The U.S. Fish & Wildlife Service Offices in Washington and the Washington State Departments of Ecology, Health and Fish & Wildlife have received copies of this request. Any comments received from any of the listed agencies will be forwarded to the US EPA.

11. ENFORCEMENT PROGRAM:

WSDA has adequate authority for enforcing provisions of Section 18 Emergency Exemptions and have been doing so for many years. WSDA would be glad to answer any specific questions regarding their enforcement program.

12. PREVIOUS USE UNDER SECTION 18:

None.

13. PROGRESS TOWARD REGISTRATION:

Sulfoxaflor is registered for use on a variety of crops (attachment 1). A tolerance petition has been submitted to US EPA for the use of sulfoxaflor on alfalfa, but this use is not expected to be approved prior to the 2017 season (attachment 5).

B. **Information Required for a Specific Exemption**

1. PEST(S) TO BE CONTROLLED:

Lygus bugs (*Lygus hesperus, Lygus elisus,* and several other *Lygus* species)

2. EVENTS WHICH BROUGHT ABOUT THE EMERGENCY CONDITIONS:

The key direct pest of alfalfa produced for seed in Washington State is the Lygus bug, *Lygus hesperus* Knight (Heteroptera: Miridae) and *Lygus elisus* Carvalho. *Lygus hesperus* accounts for 80% to 90% of the Lygus bugs found in alfalfa grown for seed, with *Lygus elisus* and a few minor species accounting for the remaining 10% to 20% of the population. Lygus feeding on blossoms, setting seed, and seedpods can subsequently reduce seed yield at harvest by 75% to 100%. Unfortunately alfalfa bloom and peak pollinator activity coincide with Lygus bug population outbreaks. Growers need to be assured that they can balance pesticides applied for control of Lygus bugs while causing minimal harm to their valuable pollinators. Mitigation efforts in the past have included applying insecticides in the evening when bees are not foraging, allowing spray residues to dry by dawn when the bees forage and developing and registering soft chemistries that control Lygus with little harm to bees.

Most growers of alfalfa produced for seed in Washington State manage their own alfalfa leafcutting bees and some manage alkali bee beds. Subsequently alfalfa leafcutting and alkali bees are technically not providing pollination services under contract. Alfalfa leafcutting bees are typically the property of the grower in whose field they are placed or emerge from the grower’s property and most harm from pesticide exposure these bees

experience can be attributed directly to the grower. Alkali bees are more complicated due to the greater foraging distance they fly as they seek pollen and nectar to provision their brood. However alkali bee beds are extant and, as opposed to honey bee hives, alkali bee beds cannot be transported or closed. Alkali bees are solitary and if a female is killed or harmed the consequences are always negative to her brood. Alkali bees exhibit no altruistic behaviors. Alkali bee populations have been historically sensitive to insecticide exposure. Alkali bees were common in many alfalfa seed producing districts into the 1960s but as chlorinated hydrocarbon insecticides were replaced with organophosphate insecticides anecdotally the distribution and prevalence of alkali bee populations was diminished. Water availability limits the production of many crops in the Walla Walla Valley. Consequently, alfalfa produced as a seed crop is among the few crops that can be grown profitably in the Walla Walla Valley. Managers of alkali bee beds have learned to communicate with and educate growers of other crops that are being produced in proximity to their bee beds. Specific crops including sweet onions that have bolted, blooming potatoes, and onion seed crops typically receive a fairly intensive insecticide load to control pest insect populations. Managers of alkali bee beds do their best to dissuade other crop producers from using highly toxic insecticides during the times that alkali bees are actively foraging.

Drought conditions in the western US, particularly California, have resulted in a dramatic increase in the price of alfalfa as a forage crop prompting Washington State growers to increase their acreage of alfalfa forage. Consequently, the acreage of forage alfalfa produced in proximity to fields of alfalfa grown for seed has increased substantially. According to data from the WSDA Natural Resource Assessment Section, the total acreage of alfalfa hay in Franklin, Grant, Walla Walla and Yakima Counties has increased more than 10% from 2011 to 2016 (Perry Beale, personal communication).

	2011 Alfalfa hay acreage	**2016 Alfalfa hay acreage**
Franklin County	53,169	58,577
Grant County	94,173	108,354
Walla Walla County	10,336	11,124
Yakima County	21,895	26,147
Total	**179,573**	**204,202**

Note – Acreage estimates are rounded to the nearest acre.

Drs. Doug Walsh and Tim Waters have documented transect trapping research programs and have concluded that forage alfalfa is the key source of Lygus adults that migrate into fields of alfalfa produced for seed (Waters, unpublished data). Fields of alfalfa forage are cut and harvested on average 3 to 4 times per growing season. Adult Lygus are herded out of forage fields during these harvest events, and subsequently migrate in great abundance to fields of alfalfa produced for seed. Researchers in California indicated that large numbers of Lygus can be found in some cotton fields, and migration from harvested alfalfa fields was mentioned as one of the primary sources of the Lygus infestation (attachment 6).

In 2015, WSDA approved Section 24c SLN registration WA-150009 for the use of Transform WG on alfalfa grown for seed to control Lygus bugs. However, the court decision that resulted in the cancellation of the federal registration for Transform WG also resulted in the cancellation of SLN registration WA-150009. Growers that used sulfoxaflor

in 2015 experienced excellent control of Lygus bugs. Many growers had existing stocks of Transform they were allowed to use in 2016. Most growers have depleted their existing stocks of Transform.

Lygus is a generalist pest of many different crops and has a well-documented history of developing resistance to the insecticides applied for its control. Specifically there is concern that naled, an organophosphate insecticide that is applied for Lygus control has lost its effectiveness on *L. hesperus* due to the development of resistance in populations in and near fields of alfalfa produced for seed. Furthermore, growers are concerned that they are relying exclusively on flonicamid for *L. hesperus* during bloom.

3. DISCUSSION OF THE ANTICIPATED RISKS TO THREATENED OR ENDANGERED (T/E) SPECIES, BENEFICIAL ORGANISMS, OR THE ENVIRONMENT THAT WOULD BE REMEDIED BY THE PROPOSED USE OF THE PESTICIDE:

In the document entitled *Efficacy and Bee Safety Data* (attachment 4) we clearly document that Transform is safer on beneficial organisms, including bees, than any organophosphate or pyrethroid insecticides. In the publication entitled *Pest and Pollinator Strategic Management Plan for Alfalfa Seed Production in the Western US* (attachment 7) we document that most growers in the Western US can apply as many as 4 insecticide applications during the bloom season. This often includes organophosphate or pyrethroid insecticides. Sulfoxaflor is much safer to bees and other beneficial arthropods than the organophosphates or pyrethroids that are registered for use during bloom. In the letter of support from Mr. Mike Ingham he states that a single application of sulfoxaflor will replace as many as 3 applications of naled during bloom. Three applications of naled has a substantial negative impact on the well-being of pollinators and other beneficial arthropods. WSDA has received several letters of support for this use from individual alfalfa seed growers, as well as industry organizations (attachment 8).

Alfalfa Produced for Seed Best Management Practices

Ideally, pesticide use and specifically insecticide use during bloom when pollinators are foraging should be avoided. Unfortunately, aphid populations can build to damaging levels during bloom and Lygus bugs even at relatively low abundance in fields of alfalfa produced for seed can substantially reduce seed yields. Control of these insects typically requires an insecticide intercession. Insecticides applied in recent years have included the organophosphate insecticide naled (IRAC Chemical Sub-group 1B), the neonicotinoid insecticide acetamiprid (IRAC Chemical Sub-group 4A), the insect growth regulator insecticide novaluron (IRAC Chemical Group 15), and the pyridinecarboxamide insecticide flonicamid (IRAC Chemical Group 29). Several other insecticides including the sulfoximine insecticide sulfoxaflor (IRAC Chemical Sub-group 4C) and the butinolide insecticide flupyridifurone (IRAC Chemical Sub-group 4D) are in the registration pipeline and may become available for use during bloom on alfalfa produced as a seed crop. Acetamiprid was registered under Section 24c for 5 years, but lack of grower support for its continued use led the registrant to cancel the SLN registration. Novaluron was registered under Section 24c, but it was demonstrated to have negative impact on developing brood and the registration has been cancelled. Acetamiprid and novaluron cannot be used on alfalfa grown for seed in Washington.

The mainstay insecticides used for insect pest control during bloom are flonicamid and naled. Naled has been used for pest control for over 20 years. It was demonstrated that if

residues of naled were still wet on mornings with dew on plants, bees could be exposed and this exposure could prove toxic. Hence growers avoid applying naled to blooming alfalfa if temperatures are expected to drop below the dew point. With naled and other insecticides a tradition of applying insecticides in the evening or at night has been adopted by producers of alfalfa produced for seed. With the current grower standard flonicamid it has been demonstrated that early morning applications are safe to foraging bees, but keeping with the traditions adopted with other insecticides that were more toxic to bees, flonicamid is applied in the evening or at night.

Growers of alfalfa produced for seed in the Walla Walla have imposed a late spring cutoff of May 31 regarding the use organophosphate and pyrethroid insecticides in a cleanup spray. The cutoff in colder areas of the Columbia Basin can be as late as June 8. These cutoff dates help prevent exposure of foraging bees to residues of these insecticides. Applicators also must pay attention to the location of sensitive sites adjacent to alfalfa seed fields. These include surface water, endangered species habitat, organic fields, nearby blooming crops, and beehives.

Commercial managers of honey bee colonies are often limited in the shrub steppe habitats of Eastern Washington State as to the location of places they can over-summer their bees with adequate pollen and nectar resources. Consequently, there are locations in the Columbia Basin and Walla Walla Valleys where honey bees are placed during the summer months where the bees will choose to forage in fields of alfalfa produced for seed. The pollination services these honey bees provide for alfalfa seed producers are limited. Inadvertent honey bee kills can occur late in the alfalfa seed bloom cycle when leafcutting and alkali bees have ceased foraging for the season in alfalfa seed fields but honey bees are still foraging the final dregs of late-season bloom. Honey beekeepers should place their hives in locations that can be identified and ownership of the hives (including a name and cellphone number) should be on all hives.

A Pest and Pollinator Strategic Management Plan workshop was held on January 31, 2017 in Las Vegas, NV. Lygus management is a key priority and registering Transform for Lygus control was rated as a high regulatory priority by alfalfa seed growers in the Western US (attachment 7).

4. DISCUSSION OF ANTICIPATED SIGNIFICANT ECONOMIC LOSS:

Recent records of alfalfa seed yields in Washington State

Year	**Pounds**	**Acres**	**Lbs / acre**	**Avg $ / lb**	**Gross revenue / acre**
2011	9,507,577	9,454	1,005.67	$2.50	$2,514.18
2012	12,538,740	12,524	1,001.18	$2.50	$2,502.95
2013	9,024,422	14,099	640.08	$2.50	$1,600.20
2014	14,732,271	14,273	1,032.18	$2.50	$2,580.45
2015	12,735,000	14,885	855.56	$2.50	$2,138.90
Average for 2011, 2012, 2014, and 2015 (2013 was excluded)	12,378,397	12,784	973.65	$2.50	$2,434.12

In 2006, Hinman and Kugler estimated that costs associated with establishing a fall seeded alfalfa seed crop was $477.62 and that the operating expenses for alfalfa produced for seed was $1,126.86 in year 1, $1,080.23 in year 2, and $1,074.97 in year 3 (attachment 9). They assumed that a grower had received a 3 year contract from the genetic provider they were increasing seed for. Amortizing planting and establishment expenses over 3 years and averaging the three years of estimated cost of production this averages to $1,252.23 per acre per year. These 2006 estimates are certainly out of date most notably with the costs associated with pollination services provided by purchased alfalfa leafcutting bees that have increased substantially over the past several years. Unfortunately USDA-NASS has stopped collecting production data for alfalfa produced for seed after 2013. Acreage data in years after 2012 was received from the WSDA Natural Resource Assessment Section (Perry Beale, personal communication), and the production data was calculated from the Washington Alfalfa Seed Commission's receipt of assessments that are based on pounds of clean seed produced (assessments are collected by the alfalfa seed companies that contract with growers).

Lygus bug populations were extremely high and uncontrollable in 2013. Yield losses in 2013 compared to other years displayed can be directly attributed to Lygus bug population outbreak. Lygus bug outbreaks in 2015 were substantial but growers were able to use sulfoxaflor in 2015, based on a Section 24c SLN registration. The use of sulfoxaflor in 2015 prevented the substantial economic losses growers incurred in 2013. Planted acreage has increased since 2011.

Estimates for net revenue per acre in Washington State

Year	**Gross revenue**	**Cost of production**	**Net revenue**
2011	$2,514.18	$1,252.23	$1,261.95
2012	$2,502.95	$1,252.23	$1,250.72
2013	$1,600.20	$1,252.23	$347.97
2014	$2,580.45	$1,252.23	$1,328.22
2015	$2,138.90	$1,252.23	$886.67
Average for 2011, 2012, 2014, and 2015 (2013 was excluded)	$2,434.12	$1,252.23	$1,181.89

Emergency Exemption, Tier 3 Analysis, Washington State

	Baseline[1]	**Emergency[2]**	**Change**	**% Change**
Yield (lbs / acre)	974	640	-334 lbs	-34.3%
Price ($ / lb)	$2.50	$2.50	n/a	n/a
Gross Revenue ($ / acre)	$2,434.12	$1,600.20	-$833.92	-34.3%
Net Revenue ($ / acre)[3]	$1,181.89	$347.97	-$833.92	-70.6%

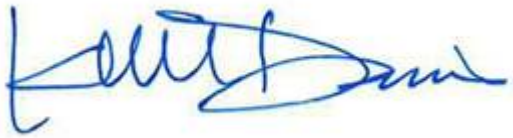
1/ Based on average of gross revenues from average of 2011, 2012, 2014, and 2015. The 2013 growing season was an emergency year due to uncontrollable Lygus populations and the extensive yield loss experienced by growers to Lygus feeding. Yield estimate is rounded to the nearest pound.
2/ Based on an emergency year, 2013 in which Lygus were uncontrollable with available insecticides. Yield estimate is rounded to the nearest pound.
3/ Based on production costs of $1,252.23 per acre as estimated by Hinman and Kugler in 2006.

With an emergency uncontrollable outbreak of Lygus and ineffective insecticidal control an average 34.3% decrease in yield is expected. The estimated decrease in yield and gross revenue under the emergency of not being able to control Lygus in an outbreak year is approx. 334 pounds per acre and approx. $834 per acre. Estimated production costs are likely lower than true production costs. The loss of 2 applications of sulfoxaflor during bloom and seed set saves approx. $82 per acre but this is offset by the cost of multiple applications of naled resulting in no net savings. Production costs are estimated to be $1,252.23 per acre. Therefore, a 34.3% reduction in yields results in a 70.6% reduction in net revenue.

Based on our analysis of the above information, WSDA strongly believes that an emergency condition exists in Washington. If you have any questions, please contact Erik Johansen of our office at (360) 902-2078 or email *ejohansen@agr.wa.gov*.

Sincerely,

PESTICIDE MANAGEMENT DIVISION



Kelle Davis
Acting Program Manager, Registration and Licensing Services

cc: Section 18 Distribution List
Jamey Thomas, Dow AgroSciences
Tami Jones-Jefferson, Dow AgroSciences
Harvey Yoshida, Dow AgroSciences

Attachments:

1. Section 3 Label for Transform WG.
2. Section 18 Use Directions for Sulfoxaflor (Transform WG).
3. Letter of Support from Dr. Doug Walsh (WSU).
4. Efficacy and Bee Safety Data (WSU).
5. Letter of Support from Dow AgroSciences.
6. Sevacherian and Stern, 1975
7. Pest and Pollinator Management Strategic Plan for Alfalfa Seed Production in the Western US, 2017.
8. Letters of Support from the Alfalfa Seed Industry.
9. Costs of Producing Alfalfa Seed in the Columbia Basin of Washington State, 2006.